WHAT IS CLAIMED IS:

1. A heterostructured organic light-emitting device comprising at least one emissive layer comprising at least one host material and at least one dopant complex, the dopant complex comprising a transition metal coordinated to two bidentate NO-type ligands or a tetradentate NOON-type ligand

2. A heterostructured organic light-emitting device according to claim 1, comprising:

a substrate having a first electrode on a surface thereof;

a hole transport layer;

at least one emissive layer comprising at least one host material and at least one dopant complex, the dopant complex comprising a transition metal coordinated to two bidentate NO-type ligands or a tetradentate NOON-type ligand;

a charge transport layer; and

a second electrode sandwiching the hole transport layer, emissive layer and charge transport layer between the first and the second electrode.

3. The heterostructured organic light-emitting device of claim 2, wherein the emissive layer contains a single dopant complex, which complex dopes the host material.

4. The heterostructured organic light-emitting device of claim 3, wherein the single dopant complex is present as a monomer, a dimer, an oligomer, or mixtures thereof.

5. The heterostructured organic light-emitting device of claim 2, wherein the host material is at least one member selected from the group consisting of beryllium bis(2-(2'-hydroxyphenyl)pyridine ($Bepp_2$); 3-phenyl-4-(1'-naphthyl)-5-phenyl-1,2,4-triazole (TAZ); 2,9-dimethyl-4,7-diphenyl-1,10-phenanthroline (BCP); 4,4'-*N,N'*-dicarbazole-biphenyl (CBP);1,3-bis(*N,N*-*t*-butyl-phenyl)-1,3,4-oxadiazole (OXD7); *N,N'*-diphenyl-*N,N'*-bis(2-naphthalene)benzidine (β-NPB); *N,N'*-bis(3-methylphenyl)-*N,N'*-bis(phenyl)benzidine (TPD); 1,3,5-tris(3-methyldiphenylamino)benzene (m-MTDAB); and tetrakis(diarylamino)-9,9'-spirobifluorenes.

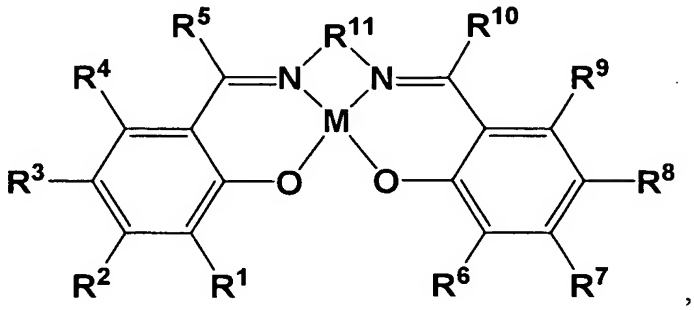
6. The heterostructured organic light-emitting device of claim 2 further comprising a plurality of emissive layers.

7. The heterostructured organic light-emitting device of claim 2 further comprising at least one filter layer.

8. The heterostructured organic light-emitting device of claim 2, wherein the emissive layer is vapor deposited or spin-coated.

9. The heterostructured organic light-emitting device of claim 8, wherein the vapor deposition comprises vapor deposition of at least one dopant complex, which complex dopes at least one host material.

10. The heterostructured organic light-emitting device of claim 1, wherein the dopant complex is:



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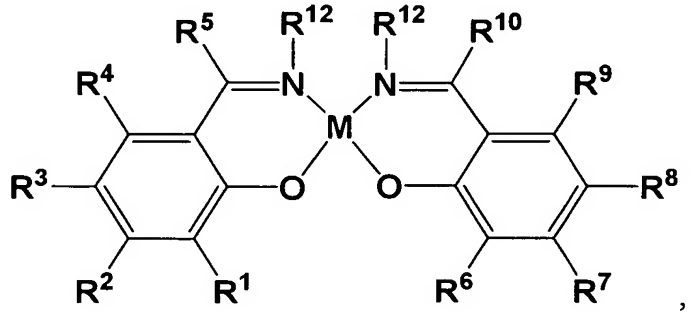

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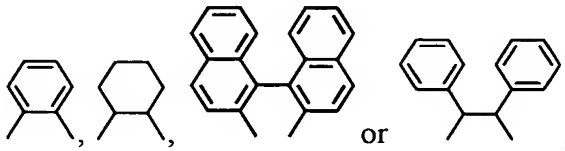
or mixtures thereof, wherein

M is selected from the group consisting of Ni, Pd and Pt;

each R^1-R^{10} is independently -H, -OH, $-NH_2$, -halogen, -CN, $-NO_2$; $-R^{13}$, $-OR^{14}$, $-NHR^{14}$, or $-N(R^{14})_2$;


, , or ; where

R^{11} is $-(C(R^{15})_2)_x-$;

each R^{12} is independently selected from the group consisting of -H, $-(C_1-C_6)$alkyl, -phenyl, -naphthyl; -halogen, and -CN;

R^{13} is -halogen; $-(C_1-C_6)$alkyl, -phenyl, or -naphthyl, each of which is unsubstituted or substituted with one or more $-(C_1-C_6)$alkyl, -phenyl, or -naphthyl;

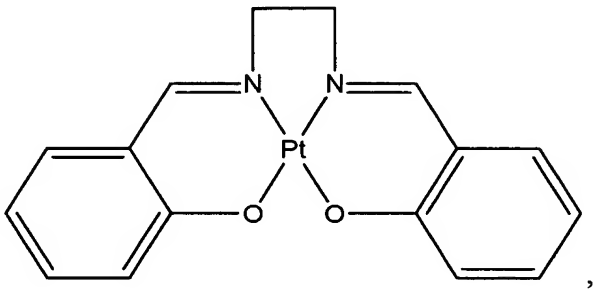
R^{14} is as defined above for R^{13} less -halogen; and

R^{15} is as defined above for R^1;

x is an integer number from 1 to 6.

11. The heterostructured organic light-emitting device of claim 10, wherein M is Pt, R^5=R^{10}, R^4=R^9, R^3=R^8, R^2=R^7, and R^1=R^6.

12. The heterostructured organic light-emitting device of claim 11, wherein the dopant complex is selected from the group consisting of:



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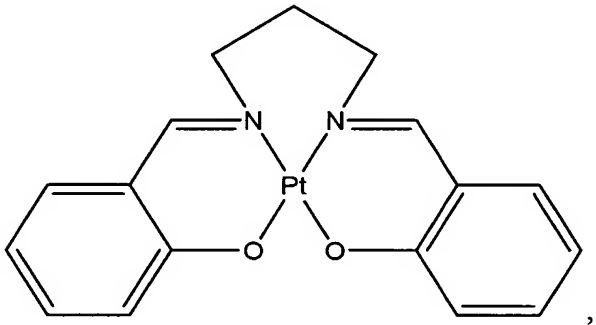

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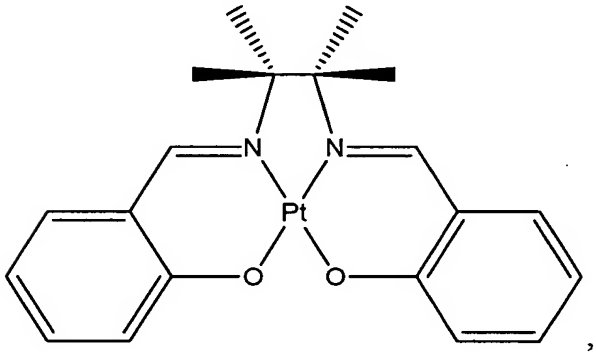

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and mixtures thereof.

13. The heterostructured organic light-emitting device of claim 2, wherein the hole transport layer comprises at least one material selected from the group consisting of beryllium bis(2-(2'-hydroxyphenyl)pyridine ($Bepp_2$); 3-phenyl-4-(1'-naphthyl)-5-phenyl-1,2,4-triazole

(TAZ); 2,9-dimethyl-4,7-diphenyl-1,10-phenanthroline (BCP); 4,4'-*N,N'*-dicarbazole-biphenyl (CBP);1,3-bis(*N,N-t*-butyl-phenyl)-1,3,4-oxadiazole (OXD7); *N,N'*-diphenyl-*N,N'*-bis(2-naphthalene)benzidine (β-NPB); *N,N'*-bis(3-methylphenyl)-*N,N'*-bis(phenyl)benzidine (TPD); 1,3,5-tris(3-methyldiphenylamino)benzene (m-MTDAB); and tetrakis(diarylamino)-9,9'-spirobifluorenes.

14. The heterostructured organic light-emitting device of claim 2, wherein the charge transport layer comprises lithium fluoride, cesium fluoride or lithium benzoate.

15. The heterostructured organic light-emitting device of claim 1, wherein CIE_1931 coordinates describing light emission are substantially x = 0.33 and y = 0.35.

16. A method for preparing a heterostructured white organic light emitting diode, the method comprising forming an emissive layer comprising at least one host material and at least one dopant complex, the dopant complex comprising a transition metal coordinated to two bidentate NO-type ligands or a tetradentate NOON-type ligand.

17. A method for preparing a heterostructured white organic light emitting diode according to claim 16, the method comprising the steps of:

providing a substrate upon having a first electrode on a surface thereof;

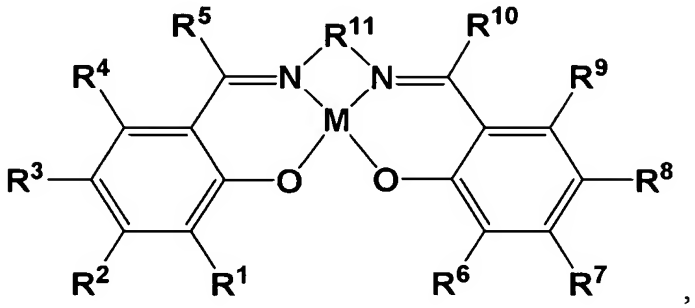
providing a hole transport layer on top of the first electrode;

forming an emissive layer on top of the hole transport layer, the emissive layer comprising at least one host material and at least one dopant complex, the dopant complex comprising a transition metal coordinated to two bidentate NO-type ligands or a tetradentate NOON-type ligand;

providing a charge transport layer on top of the emissive layer, and

providing a second electrode on top of the charge transport layer.

18. The method of claim 17, wherein the dopant complex is:



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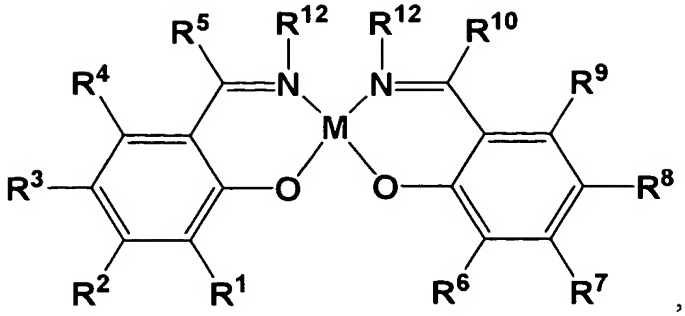
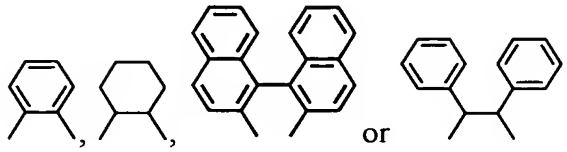


or mixtures thereof, wherein

M is a metal selected from the group consisting of Ni, Pd and Pt.;

each R^1-R^{10} is independently -H, -OH, $-NH_2$, -halogen, -CN, $-NO_2$; $-R^{13}$, $-OR^{14}$, $-NHR^7$, or $-N(R^7)_2$;



; where

R^{11} is $-(C(R^{15})_2)_x-$;

each R^{12} is independently -H, $-(C_1-C_6)$alkyl, -phenyl, -naphthyl; -halogen, or -CN;

R^{13} is -halogen; $-(C_1-C_6)$alkyl, -phenyl, or -naphthyl, each of which is unsubstituted or substituted with one or more $-(C_1-C_6)$alkyl, -phenyl, or -naphthyl;

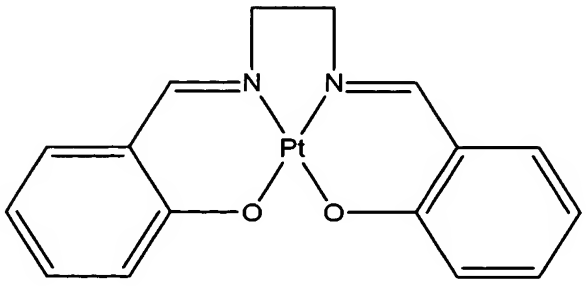
R^{14} is as defined above for R^{13} less -halogen; and

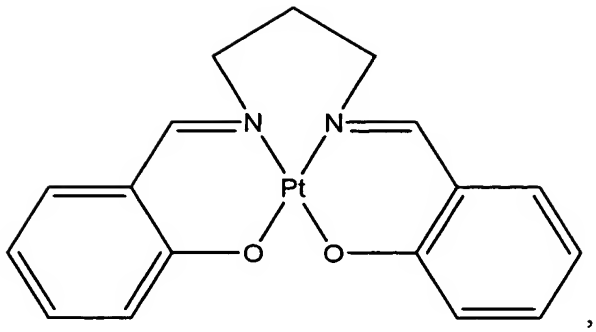
R^{15} is as defined above for R^1;

x is an integer number from 1 to 6.

19. The method of claim 18, wherein M is Pt, $R^5=R^{10}$, $R^4=R^9$, $R^3=R^8$, $R^2=R^7$, and $R^1=R^6$.

20. The method of claim 17, wherein the dopant complex is selected from the group consisting of:





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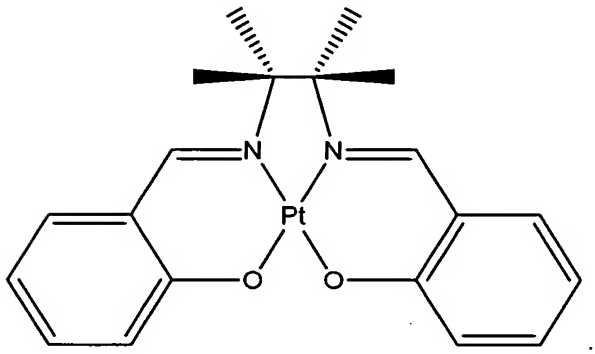

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and mixtures thereof.

21. The method of claim 17 further comprising the step of changing a color of light generated by the diode by one or more of increasing the concentration of the dopant complex; generating white light with a low concentration of the dopant complex; reducing the range over which light is emitted by the emissive layer; adjusting the concentration of the dopant complex to be within the range from about 2 % to about 5 % based on the weight of dopant complex and host material; and adjusting the concentration of the dopant complex such that CIE_1931 coordinates of emitted light are substantially x = 0.33 and y = 0.35 or 0.33.

22. The method of claim 17 further comprising incorporating the organic light emitting diode in a display.